Catalogue of American Amphibians and Reptiles.

McCranie, J.R. and E. Greenbaum. 2008. *Bolitoglossa heiroreias*.

Bolitoglossa heiroreias Greenbaum

Magnadigita engelhardti: Mertens 1952:20.
Bolitoglossa dunni: Wake and Lynch 1976:16 (part).
Bolitoglossa engelhardti: Villa et al. 1988:3 (part).
Bolitoglossa conanti: McCranie and Wilson 1993:8.
Bolitoglossa cf. *conanti*: Leenders and Watkins-Colwell 2004:5.
B [olitoglossa]. M [agnadigita]. sp. 3: Parra-Olea et al. 2004:329.
Bolitoglossa heiroreias Greenbaum 2004:412. Type-locality, "Camel Cigarettes Field Station at base of Cerro Montecristo, Depto. Santa Ana, El Salvador, elevation 1880 m…14°24'04"N, 89°21'02"W" Holotype, University of Kansas, Museum of Natural History (KU) 289800 an adult female, collected by E. Greenbaum, 14 July 2000 (examined by Greenbaum).
Bolitoglossa (Magnadigita) heiroreias: Raffaèlli, 2007:270.

• **CONTENT**. No subspecies are recognized.

• **DEFINITION**. *Bolitoglossa heiroreias* is a moderately large salamander (SVL 31.5–47.7 mm, mean = 40.3±1.4 mm in 12 males, 25.6–63.1 mm, mean = 44.6±2.0 mm in 22 females) with a long, broad head (head length/SVL 0.229–0.304 in males, 0.221–0.280 in 20 females; head width/SVL 0.149–0.203 in males, 0.152–0.206 in 20 females). The snout is truncate to broadly rounded in dorsal aspect and broadly rounded in lateral profile. The labial protuberances are well developed in both sexes and pronounced in adult males. Adult males have a distinct, oval-shaped mental gland cluster. The eyes are slightly protuberant and not or only narrowly visible beyond the margin of the jaw when viewed from below. The postorbital groove is shallow and irregular and extends posteriorly from the eye before turning sharply ventrally to connect with the gular fold, and another groove proceeds sharply ventrally just posterior to the lower jaw and extends irregularly across the throat anterior to the gular fold. There is no sublingual fold. The maxillary teeth number 40–55 (47.8±1.4) in males, 28–67 (49.6±2.1) in 21 females, and extend posteriorly to a level beyond the center of the orbit, and increase in number with increasing adult size. The vomerine teeth number 18–29 (22.7±1.1) in males, 17–33 (25.6±1.1) in 20 females, and are in long, single, arched series that extend laterally to a level slightly beyond the medial border of the choanae. The premaxillary teeth number 2–5 (3.3±0.3) in males and 2–8 (5.5±0.3) in 21 females. The premaxillary teeth are enlarged and pierce the lip or are located just posterior to the lip in adult males and are not enlarged and are located posterior to the lip and in line with the maxillary series in all females. The costal grooves number 13. The tail is nearly rectangular in cross section anteriorly, becoming ovoid for about the distal one-third of its length. The tail is strongly constricted basally and relatively short (tail length/SVL 0.716–0.922 in 9 males, 0.578–0.822 in 17 females). The limbs are relatively slender and long (hind limb length/SVL 0.294–0.343 in 10 males, 0.259–0.350 in 21 females). The adpressed limbs vary from slightly overlapping to a limb interval of 1.0 costal fold in adult males and from slightly overlapping to a limb interval of 1.5 costal folds in females. The digits are slightly webbed, with from 1.5 to 2.0 segments on both sides of Toe III on the forelimbs and of Toe III between Toes III–IV on the hind limbs free of webbing. The protruding toe tips are bluntly rounded and all toe tips have well-developed subdigital pads. The relative length of the toes on the forelimbs is I<IV<II<III, whereas that on the hind limbs is I<V<II<IV<III. A fairly distinct to poorly evident postiliac gland cluster is present. Males have cloacal papillae and females have cloacal folds.

FIGURE 1. An adult male (USNM 563895) *Bolitoglossa heiroreias* (photograph by James R. McCranie).

The color in life of the adult female holotype (from Greenbaum 2004): dorsal color dark gray with irregular black blotches; subcaudal surface orange to rusty red, becoming increasingly gray distally. Color in life of another adult male (USNM 563895; Cerro El Chuctal, Ocotepeque, Honduras; color codes and numbers from Smithe 1975–1981): dorsal surfaces of the head and body Dark Grayish Brown (20) with Jet Black (89) costal grooves; Pale brown flecking present dorsally posterior to the hind limbs and on the dorsal surface of the tail; flecking more evident just anterior to the base of the tail; dorsal surfaces of limbs Fuscous (21) with pale brown flecking; chin Buff (24) with pale brown flecking; ventral surface of body dark brown with golden brown flecking; subcaudal surface Fuscous with golden brown flecking; iris golden brown with black reticulations. Another adult male (USNM 563896; from the same locality as USNM 563895) was similar to USNM 563895, except that the dorsal spots just anterior to the base of the tail and the flecking on the dorsal surface of the tail were golden brown.

The color in alcohol of the female holotype (from Greenbaum 2004): dorsum gray with diffuse dark gray spots; lateral and ventral surfaces of the body dark brown with irregular cream blotches; subcaudal surface creamy orange, becoming pale gray distally.

• **DIAGNOSIS**. *Bolitoglossa heiroreias* is a member

of the *B. dunni* species group of the subgenus *Magnadigita* Taylor 1944 (Parra-Olea et al. 2004). Thirteen species were included in this species group by McCranie et al. (2005). *Bolitoglossa heiroreias* can be distinguished from all other species in this group by the combination of having somewhat reduced webbing (1.5 to 2.0 segments on both sides of Toe III on the forelimbs and of Toe III between Toes III–IV on the hind limbs free of webbing) and a dorsal ground color of dark gray, dull brown, or nearly black. The species also differs from the other species in the group (except DNA unknown in *B. oresbia*) in its sequence of mitochondrial cyt b and 16S genes (Parra-Olea et al. 2004).

• **DESCRIPTIONS**. Detailed descriptions of external morphology are in Greenbaum (2004), Köhler et al. (2005), and McCranie and Castañeda (2007).

• **ILLUSTRATIONS**. Color photographs are in Köhler et al. (2005), McCranie and Castañeda (2007), and Raffaèlli (2007). Black-and-white photographs are in Mertens (1952) and Greenbaum (2004). Line drawings of a fore-and hind foot are in Köhler et al. (2005) and a black-and-white photograph of a forefoot is in Greenbaum (2004).

• **DISTRIBUTION**. *Bolitoglossa heiroreias* occurs on Cerro Montecristo, a mountain range that straddles the triborder area of Guatemala, El Salvador, and Honduras. Although not yet recorded from the Honduran portion of Cerro Montecristo, it is known from two associated Honduran mountains about 4–6 km NNE of the highest peak of Cerro Montecristo. The known elevational range of occurrence is 1800–2300 m in primary to disturbed cloud forest (Lower Montane Moist Forest formation of Holdridge 1967).

• **FOSSIL RECORD**. None.

Map. Distribution of *Bolitoglossa heiroreias*. The open circle denotes the type-locality and the dots other localities.

• **PERTINENT LITERATURE**. What little is known about the natural history of this species was discussed by Rand (1957), Greenbaum (2004), Leenders and Watkins-Colwell (2004), Köhler et al. (2005), and McCranie and Castañeda (2007). Leenders and Watkins-Colwell (2004) suggested that nocturnal coloration may be slightly darker than daytime coloration. Greenbaum and Komar (2005) and Köhler et al. (2005) considered the species to be critically endangered in El Salvador. McCranie (2006) listed its Honduran localities and museum specimen numbers. Parra-Olea et al. (2004) studied its mitochondrial DNA and presented a phylogenetic analysis of its relationships among the genus *Bolitoglossa* that placed it in the *B. dunni* species group. Parra-Olea et al. (2004) placed the *B. dunni* group in the subgenus *Magnadigita* Taylor (1944). Greenbaum (2004) reproduced the figure of the "*Magnadigita*" clade previously published in Parra-Olea et al. (2004). The species was included in the diagnosis of the new species *Bolitoglossa oresbia* by McCranie et al. (2005). McCranie and Wilson (1993), Greenbaum (2004), Köhler et al. (2005), and McCranie and Castañeda (2007) included maps with its known localities plotted. McCranie and Wilson (1993, 2002) mentioned the taxonomic uncertainties of the Cerro Montecristo salamanders before they were recognized as a distinct species.

The species is mentioned in faunal lists by (those references marked with an asterisk included *Bolitoglossa heiroreias* under the names *B. conanti* or *B. dunni*; those marked with two asterisks included the species under the names *B. engelhardti* or *Magnadigita engelhardti*): Mertens (1952**), Wake and Lynch (1976*), Villa et al. (1988**), Campbell and Vannini (1989*), Dueñas et al. (2001*), Leenders and Watkins-Colwell (2004**), Cruz et al. (2006) and Raffaëlli 2007.

• **ETYMOLOGY**. The name *heiroreias* is transliterated from the Greek words ΗΕΙΡΟΣ (meaning holy) and ΟΡΕΙΑΣ (meaning mountain nymph). It is used in reference to the type-locality of the species, Cerro Montecristo.

• **COMMENT**. Greenbaum (2004) suggested the vernacular name Holy-Mountain Salamander for this species, whereas Köhler et al. (2005) used Salamandra de Montecristo and McCranie and Castañeda (2007) suggested Salamandra del Cerro Montecristo.

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